इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 10536 (1983): Castor oleine and castor oleo-stearine
[CHD 25: Soaps and other Surface Active Agents]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

Indian Standard

SPECIFICATION FOR CASTOR OLEINE AND CASTOR OLEOSTEARINE

(First Reprint NOVEMBER 1997)

UDC 661.187 : 665.335.5

© *Copyright* 1983

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1983

Indian Standard

SPECIFICATION FOR CASTOR OLEINE AND CASTOR OLEOSTEARINE

Soaps and Other Surface Active Agents Sectional Committee, CDC 35

Chairman	*Representing*
Dr B. P. Godrej	Godrej Soaps Ltd, Bombay
Members	
Shri M. S. Thakur (*Alternate* to Dr B. P. Godrej)	
Shri B. P. Baliga	Tata Oil Mills Co Ltd, Bombay
Dr N. L. Murthy (*Alternate*)	
Smt Krishna Basrur	Consumer Guidance Society of India (Regd), Bombay
Dr V. Sadasivan (*Alternate*)	
Shri S. K. Basu	Directorate General of Supplies & Disposals (Inspection Wing), New Delhi
Shri P. G. Bawari	Indian Soap & Toileteries Makers' Association, Bombay
Shri R. S. Vaidyanathan (*Alternate*)	
Shri M. A. Bhatt	Swastik Household & Industrial Products Ltd, Bombay
Shri C. R. K. Murthy (*Alternate*)	
Shri N. C. Chatterjee	National Test House, Calcutta
Shri P. K. Chakraborty (*Alternate*)	
Chemist & Mettalurgist-II, RDSO, Lucknow	Railway Board (Ministry of Railways)
Asstt Research Officer/CM-I (*Alternate*)	
Chief Chemist	Central Board of Revenues (Ministry of Finance)
Deputy Chief Chemist (*Alternate*)	
Shri S. P. Gupta	Kusum Products Ltd, Calcutta
Shri A. C. Chakrabarty (*Alternate*)	
Dr S. S. Kalbag	Hindustan Lever Ltd, Bombay
Shri V. U. Marballi (*Alternate*)	
Shri P. P. Khanna	Nand Kishore Khanna & Sons, Bombay
Shri N. K. Khanna (*Alternate*)	
Dr M. K. Kundu	Directorate of Vanaspati, Vegetable Oils & Fats, New Delhi
Dr R. A. Khan (*Alternate*)	

(*Continued on page* 2)

© *Copyright* 1983
BUREAU OF INDIAN STANDARDS
This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act

(*Continued from page* 1)

Members	*Representing*
Shri V. Lakshmikanthan	Khadi & Village Industries Commission, Bombay
Shri P. R. Malhan	Development Commissioner, Small Scale Industries, New Delhi
Shri P. Satyanaryan (*Alternate*)	
Dr V. N. Nigam	Ministry of Defence (DGI)
Shri P. K. Majumdar (*Alternate*)	
Shri S. Ramaswany	Directorate General of Technical Development, New Delhi
Shri S. N. Aggarwal (*Alternate*)	
Shri Santosh Kumar	Federation of Associations of Small Scale Soap & Detergent Manufacturers of India, New Delhi
Shri R. C. Doshi (*Alternate*)	
Shri P. K. Shanbhag	Karnataka Soaps & Detergents Ltd, Bangalore
Shri B. M. Nataraj (*Alternate*)	
Dr A. K. Vasishtha	Oil Technologists' Association of India, Kanpur
Prof V. V. R. Subrahmanyan (*Alternate*)	
Shri M. M. Vyas	Gujarat Detergent Manufacturers Association, Ahmadabad
Shri S. K. Mathur, Head (Chem)	Director General, ISI (*Ex-officio Member*)

Secretary

Shri P. S. Arora
Deputy Director (Chem), ISI

Soaps Subcommittee, CDC 35 : 1

Convener	
Dr S. S. Kalbag	Hindustan Lever Ltd, Bombay
Members	
Shri V. U. Marballi (*Alternate* to Dr S. S. Kalbag)	
Shri S. N. Agarwal	DGTD, New Delhi
Shri N. S. Kandari (*Alternate*)	
Shri J. A. Ashtaputre	Ministry of Defence (DGI)
Shri P. N. Agarwal (*Alternate*)	
Shri M. A. Bhatt	The Swastik Household and Industrial Product Ltd, Bombay
Shri C. R. Krishnamurthy (*Alternate*)	
Shri D. S. Chaudhury	Directorate General of Supplies & Disposals, New Delhi
Dr B. P. Godrej	Godrej Soaps Ltd, Bombay
Shri M. S. Thakur (*Alternate*)	
Shri S. P. Gupta	Kusum Products Ltd, Rishra
Shri A. C. Chakrabarty (*Alternate*)	
Dr S. N. Iyer	Johnson & Johnson Ltd, Bombay
Smt Usha R. Joshi (*Alternate*)	

(*Continued on page* 11)

Indian Standard

SPECIFICATION FOR CASTOR OLEINE AND CASTOR OLEOSTEARINE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 March 1983, after the draft finalized by the Soaps and Other Surface Active Agents Sectional Committee had been approved by the Chemical Division Council.

0.2 Castor oil is abundantly available in India and has varied applications. However, because of the very high percentage of hydroxy acids, it is unsuitable for incorporation in fat charges for soap making, except in very restricted quantities. It is, however, possible to chemically treat this oil to reduce and/or remove the hydroxy groups so that the oil contains predominantly stearic and monoene acids and can therefore be used as raw material for soaps to substitute tallow or hardened oils.

0.3 This standard is intended to encourage more manufacturers, not only to make a standard product for captive use, but also to make it available for general use.

0.4 Castor oleine and oleostearine are triglycerides derived from castor oil, chemically treated to eliminate hydroxyl (OH) groups of ricinoleic acid. The product shall be oleine or oleostearine depending on the unsaturation in the final product.

0.5 This standard contains clause **4.1** which calls for agreement between the purchaser and the supplier.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for castor oleine and castor oleostearine for use in the manufacture of soaps.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in **2** of IS : 286-1978* and IS : 7597-1974† shall apply.

3. REQUIREMENTS

3.1 The material shall be reddish brown in colour having liquid or semi-solid consistency. It shall be free from sediments, suspended and other foreign matter. It shall also be free from adulterants when tested as prescribed in IS : 548 (Part 2)-1976‡.

3.2 The material shall also comply with the requirements given in Table 1.

4. PACKING

4.1 The material shall be packed in suitable well closed containers as agreed to between the purchaser and the supplier.

5. MARKING

5.1 The containers shall be marked with the following information:

a) Name of the material;
b) Net mass of the material;
c) Manufacturer's name and his recognised trade-mark, if any;
d) Batch number or lot number in code or otherwise; and
e) Month and year of manufacture.

5.1.1 The containers may also be marked with the Standard Mark.

5.1.2 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

---

*Methods of sampling and test for soaps (*second revision*).

†Glossary of terms relating to surface active agents.

‡Methods of sampling and test for oils and fats : Part 2 Purity tests (*third revision*).

TABLE 1 REQUIREMENTS FOR CASTOR OLEIN AND CASTOR OLEOSTEARINE

(*Clause* 3.2)

SL No.	CHARACTERISTIC	REQUIREMENT FOR		METHOD OF TEST, REF TO	
		Castor Olein	Castor Oleostearine	Cl No. in IS : 548 (Part 1)-1964[*]	Appendix
(1)	(2)	(3)	(4)	(5)	(6)
i)	Moisture and volatile matter, percent by mass, *Max*	0·25	0·25	5	—
ii)	Colour in ½-in cell on the Lovibond scale, expressed as (Y + 5 R), *Max*	35	35	13	—
iii)	Acid value, *Max*	25	25	7	—
iv)	Hydroxyl value, *Max*	20	20	16	—
v)	Iodine value (Wijs)	41–90[†]	10–40[†]	14	—
vi)	Saponification value	180–190	180–190	15	—
vii)	Unsaponifiable matter, percent by mass, *Max*	1	1	8	—
viii)	Keto acids content, percent by mass, *Max*	5	5	—	A
ix)	Polymer content, percent by mass, *Max*	2	2	—	B
x)	Nickel content, parts per million, *Max*	10	50	—	C

[‡] Methods of sampling and test for oils and fats : Part 1 Sampling, physical and chemical tests (*revised*).

[†] Actual value shall be as agreed to between the manufacturer and the supplier.

5.1.2 In addition the containers shall also be marked with the following information either printed on the label affixed to the containers or lithographed or stencilled thereon with indelible ink in a type size of not less than 50 mm.

‘ FOR INDUSTRIAL (NON-EDIBLE) USE ONLY ’

6. SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in **3** of IS : 548 (Part I)-1964*.

7. TESTS

7.1 Test shall be carried out as prescribed in IS : 548 (Part I)-1964* IS : 548 (Part II)-1976* and Appendices B to D of this standards. References to the relevant clauses of IS : 548 (Part I)-1964* and Appendices of the standard are given in col 5 and 6 of Table 1.

7.2 Quality of Reagents — Unless specified otherwise pure chemicals and distilled water (*see* IS : 1070-1977†) shall be used in tests.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the results of the analysis.

APPENDIX A

[*Table* 1, *Sl No.* (viii)]

DETERMINATION OF KETO ACIDS CONTENT

A-1. REAGENTS

A-1.1 Ethyl Alcohol — 95 percent (*v/v*).

A-1.2 Bromophenol Blue Indicator — 0·1 percent solution.

A-1.3 Standard Alcoholic Sodium Hydroxide Solution — 0·5 N.

A-1.4 Dilute Hydrochloric Acid — 0·5 N.

A-1.5 Hydroxylamine Hydrochloride Solution — 0·5 N.

A-1.5.1 *Preparation of 0·5 N Hydroxylamine Hydrochloride Solution* — Dissolve 39·9 g of recrystallized hydroxylamine hydrochloride in 100 ml of distilled water; warm to a temperature of 650°C on a steam bath to yield a clear solution. Add this solution slowly to 1 000 ml of 95 percent alcohol and mix thoroughly. Then add 50 ml of a 0·1 percent solution of bromophenol blue indicator in 50 percent alcohol and sufficient 0·5 N alcoholic sodium hydroxide solution to a greenish shade; this usually requires about 20 to 25 ml of alkali. The proper degree of

---

*Methods of sampling and test for oils and fats:
Part I Sampling, physical and chemical tests (*revised*).
Part II Purity tests (*third revision*).

†Specification for water for general laboratory use (*second revision*).

neutralization is obtained when the addition of 35 ml of the solution shows a distinct greenish shade which changes to a distinct yellow upon the addition of one drop of dilute hydrochloric acid. A stable solution of hydroxylamine hydrochloride is thus obtained which is approximately 0·5 N, an exact adjustment is not required.

A-2. PROCEDURE

A-2.1 Weigh accurately requisite amount of sample (*see* Note below) into a 100-ml saponification flask and add 35 ml of hydroxylamine hydrochloride solution measured from a graduated cylinder. Permit the flask to stand at room temperature for 15 minutes and titrate the liberated hydrochloric acid with freshly standardized alcoholic sodium hydroxide solution. The titration is continued until the original greenish shade of the hydroxylamine solution is obtained. A second flask containing 35 ml of hydroxylamine hydrochloride solution may be used as a blank to assure a more accurate colour match.

NOTE — Mass of the sample to be taken for analysis shall be as follows:

Sample mass : 2·5 g for keto content up to 10 percent,
1·0 g for keto content from 11 to 25 percent, and
0·5 g for keto content above 25 percent.

A-3. CALCULATION

A-3.1 Calculate the percentage of keto acid present in the sample as follows:

$$\text{Percentage of keto acids} = \frac{V \times m}{20\,M_1}$$

where

V = volume in ml of 0·5 N alcoholic sodium hydroxide solution used for neutralization,

m = molecular mass of keto acids which can be taken as 298, and

M_1 = mass in g of the sample taken for analysis.

APPENDIX B

[*Table* 1, *Sl No.* (ix)]

DETERMINATION OF POLYMER CONTENT

B-1. REAGENTS

B-1.1 Solid Potassium Hydroxide

B-1.2 Glycerine — dynamite or C. P. grade.

B-1.3 Concentrated Sulphuric Acid

B-1.4 Methyl Alcohol

B-2. PROCEDURE

B-2.1 Preparatiou of Fatty Acids — With the aid of heat, dissolve 40 g of solid potassium hydroxide in 200 g of glycerine. Bring the temperature of the mixture to 150°C and add 100 g of oil or melted fat sample and reheat to 140-150°C. Continue stirring until saponification is complete. Do not heat to above 150°C. Cool slightly and add about 400-500 ml water, stir the mass well and heat until the soap is dissolved. Add carefully while stirring 100 ml of sulphuric acid (50 percent by mass). Boil until the fatty acids are completely melted and clear. Remove the aqueous layer by siphon, add fresh water and boil again till the fatty acids are clear and melted. Siphon the aqueous layer and repeat washings till the aqueous layer is neutral to methyl orange indicator. Pass the fatty acids through filter paper to dry them.

B-2.2 Preparation of Methyl Esters — Reflux the dried fatty acids as obtained in **A-2.1** for 2 hours with about 4 times their mass of methyl alcohol containing 1 percent of concentrated sulphuric acid. Distil the unreacted methanol and wash the esters free of mineral acid.

B-2.3 Distillation — Weigh accurately about 50 g of the methyl esters as obtained in **A-2.2** in a 100-ml distillation flask. Distil the methyl esters at 210°C under a vacuum of 1·5 mm of mercury. Weigh the residue left in the distillation flask.

B-3. CALCULATION

B-3.1 Calculate the polymer content in the sample as follows:

$$\text{Polymer content, percent by mss} = \frac{M_1}{M_2} \times 100$$

where

M_1 = mass in g of the residue left in the distillation flask, and
M_2 = mass in g of methyl esters taken for distillation.

APPENDIX C

[*Table* 1, *Item* (x)]

DETERMINATION OF NICKEL

C-0. OUTLINE OF THE METHOD

C-0.1 The method is based on the isolation of metal from the soap and reaction between nickel in the oxidised form with dimethyl glyoxime forming a red colour, the intensity of which is proportional to the amount of nickel present in the sample.

C-1. APPARATUS

C-1.1 UV Spectrophotometer

C-2. REAGENTS

C-2.1 Sodium Hydroxide — Solid.

C-2.2 Concentrated Hydrochloric Acid

C-2.3 Dimethyl Glyoxime Solution — 0·1 percent (*v/v*) in 95 percent ethyl alcohol.

C-2.4 Saturated Bromine Water

C-2.5 Standard Nickel Sulphate Solution — Containing 1 000 µg of nickel (Ni) per ml.

C-2.6 Liquor Ammonia — Relative density 0·9.

C-3. PROCEDURE

C-3.1 Isolation of Metals from Caster Oleine and Caster Oleostearine — To 40 g of sample in a 500-ml beaker add 40 ml of caustic soda solution containing 8 g of sodium hydroxide; mix well and heat on water bath until the saponification is complete. Add 200 ml hot water, heat until all the soap goes into solution. Add to this soap solution 40 ml of concentrated hydrochloric acid, stir and keep on steam bath until fatty acid layer separates. Add 20 g of paraffin wax, stir at intervals and allow to settle until phases are clear. Cool to room temperature.

C-3.1.1 Remove wax cake with rod, rinse with water and add rinsings to aqueous phase. Evaporate aqueous phase to about 60 ml by gentle boiling. Add 100 ml of water and filter through paper washed previously with hydrochloric acid. Evaporate the filtrate and washings to about 60 ml. Cool and transfer to volumetric flask. Make up the volume to 100 ml. Take aliquot portions for metal estimation.

C-3.2 Determination of Nickel Content — Take 50 ml aliquot of the aqueous solution from the test solution in a 250-ml beaker. Evaporate the solution to about 15 ml by heating. Transfer the solution to a 50-ml glass stoppered volumetric flask using a small quantity of water for rinsing the solution from the beaker into the volumetric flask. Add to the flask 3 ml of saturated bromine water and allow to stand for one minute. Add ammonia liquor dropwise until excess bromine is destroyed as indicated by the disappearance of brown colour. Then add 5 ml of ammonia liquor in excess. If a precipitation occurs, filter the solution and wash the precipitate with water; combine the filtrate and the washings and concentrate to a volume of a few ml and transfer to a 50-ml volumetric flask. Add 10 ml of dimethyl glyoxime solution, followed by 15-20 ml of 95 percent ethyl alcohol. Mix thoroughly and make up the volume and again mix thorougly. Allow the solution to stand for 5 minutes to permit full development of colour and take the absorption/transmittance reading at 445 nm.

Prepare and conduct blank determination simultaneously and similar in all respects. The transmittance of the blank should be 98 ± 1 percent. Determine the nickel content of the sample by reference to a concentration-transmittance graph prepared as follows.

C-3.3 Preparation of Concentration Transmittance Graph — Weigh accurately 2·261 7 g of nickel sulphate (99 percent $NiSO_4 \cdot 6H_2O$) and dissolve in water in a 500-ml volumetric flask. Add 30 ml of concentrated hydrochloric acid and bring to volume. This solution contains 1 000 µg of nickel per ml. Make appropriate dilutions of this solution and process this solution as in sample above. The dilutions should cover a range 0-100 µg. Finally plot a curve relating transmittance to micrograms of nickel.

C-3.4 Calculation

$$\text{Nickel content, parts per million} = \frac{M_1 - M_2}{m}$$

where

M_1 = micrograms of nickel present in sample,
M_2 = micrograms of nickel present in blank, and
m = mass in grams of the sample taken for the test.

(*Continued from page* 2)

Members	*Representing*
Shri P. P. Khanna	Nand Kishore Khanna & Sons, Bombay
Shri N. N. Khanna (*Alternate*)	
Shri K. S. Krishnan	Oil Technologists Association of India, Kanpur
Dr M. M. Ahuja (*Alternate*)	
Shri Shridhar Krishnan	K. S. Krishnan & Associates, New Delhi
Shri K. S. Krishnan (*Alternate*)	
Shri V. Lakshmikanthan	Khadi & Village Industries Commission, Bombay
Shri K. C. Mathur	Shriram Foods & Fertiliser Industries, New Delhi
Shri K. P. Sharma (*Alternate*)	
Dr N. L. Murthy	Tata Oil Mills Co Ltd, Bombay
Dr V. B. Desai (*Alternate*)	
Shri B. M. Nataraj	Karnataka Soaps & Detergents Ltd, Bangalore
Shri C. G. Hosur (*Alternate*)	
Shri S. C. Pandey	Office of the Development Commissioner (SSI), New Delhi
Dr V. Sadasivan	Consumer Guidance Society of India, Bombay
Shri Santosh Kumar	Federation of Associations of Small Scale Soap & Detergent Manufacturers of India, New Delhi

BUREAU OF INDIAN STANDARDS

***Headquarters*:**
Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones: 323 0131, 323 3375, 323 9402
Fax : 91 11 3234062, 91 11 3239399, 91 11 3239382

Telegrams : Manaksanstha
(Common to all Offices)

***Central Laboratory* :**

	Telephone
Plot No. 20/9, Site IV, Sahibabad Industrial Area, Sahibabad 201010	8-77 00 32

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	323 76 17
*Eastern : 1/14 CIT Scheme VII M, V.I.P. Road, Maniktola, CALCUTTA 700054	337 86 62
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	60 38 43
Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113	235 23 15
†Western : Manakalaya, E9, Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093	832 92 95

Branch Offices::

'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001	550 13 48
‡Peenya Industrial Area, 1st Stage, Bangalore-Tumkur Road, BANGALORE 560058	839 49 55
Gangotri Complex, 5th Floor, Bhadbhada Road, T.T. Nagar, BHOPAL 462003	55 40 21
Plot No. 62-63, Unit VI, Ganga Nagar, BHUBANESHWAR 751001	40 36 27
Kalaikathir Buildings, 670 Avinashi Road, COIMBATORE 641037	21 01 41
Plot No. 43, Sector 16 A, Mathura Road, FARIDABAD 121001	8-28 88 01
Savitri Complex, 116 G.T. Road, GHAZIABAD 201001	8-71 19 96
53/5 Ward No.29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003	54 11 37
5-8-56C, L.N. Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
E-52, Chitaranjan Marg, C-Scheme, JAIPUR 302001	37 29 25
117/418 B, Sarvodaya Nagar, KANPUR 208005	21 68 76
Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
NIT BUilding, Second Floor, Gokulpat Market, NAGPUR 440010	52 51 71
Patliputra Industrial Estate, PATNA 800013	26 23 05
Institution of Engineers (India) Building 1332 Shivaji Nagar, PUNE 411005	32 36 35
T.C. No. 14/1421, University P. O. Palayam, THIRUVANANTHAPURAM 695034	6 21 17

---

*Sales Office is at 5 Chowringhee Approach, P.O. Princep Street, CALCUTTA 700072	27 10 85
†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007	309 65 28
‡Sales Office is at 'F' Block, Unity Building, Narashimaraja Square, BANGALORE 560002	222 39 71

Printed at Simco Printing Press, Delhi, India